1. A method of detecting vapor recovery system failures associated with a fuel dispensing point, comprising:

a) determining an amount of fuel dispensed at each of the plurality of dispensing points at multiple times;

b) determining a composite vapor flow rate for the plurality of dispensing points at multiple times;

c) calculating a vapor flow to dispensed fuel ratio for each of the plurality of dispensing points based on the amounts of fuel dispensed at each of the plurality of dispensing points and the composite vapor flow rates for the plurality of dispensing points;

d) determining if the vapor flow to dispensed fuel ratio for each of the plurality of dispensing points is within an acceptable range.

2. The method of claim 1 further comprising the steps of:

e) repeating the steps (a), (b), and (c) to determine each of a plurality of vapor flow to dispensed fuel ratios for each of the plurality of dispensing points; and

f) determining whether the plurality of vapor flow to dispensed fuel ratios for each of the plurality of fuel dispensing points are consistently low, thereby detecting vapor recovery system failures.

3. The method of claim 1 wherein the calculating step comprises:

forming a generalized equation for the relationship between vapor flow, fuel flow, and the vapor flow to dispensed fuel ratio, for each of the plurality of fuel dispensing points; and

solving each of the generalized equations for the vapor flow to dispensed fuel ratio for each of the plurality of fuel dispensing points.

4. The method of claim 3 wherein the generalized equation is in the form of $R = (L^TL)^{-1}L^TA$, wherein L is a matrix comprising the amounts of fuel dispensed at each of the plurality of fuel dispensing points, L^T is the transpose of L, A is a vector of the composite vapor flow rates, and R is a vector of the vapor flow to dispensed fuel ratios.

5. The method of claim 1 wherein the steps (a) and (b) are performed during a plurality of busy periods.

6. The method of claim 1 wherein the plurality of fuel dispensing points form a group of fuel dispensing points sharing a common vapor flow sensor, the method further comprising the step of determining a leaking dispensing point by determining which of the vapor flow to dispensed fuel ratios does not lower in value.

7. A method of detecting a true vapor recovery failure in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the method comprising the steps of:

calculating a plurality of vapor flow to dispensed fuel ratios for each of a plurality of fuel dispensing points;

determining an observed number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determining an expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points; and

determining whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on a calculation that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points.

8. The method of claim 7 wherein the determining whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure step comprises producing a chi-squared statistic based on the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points and comparing the chi-squared statistic to a critical value.

9. The method of claim 7 further comprising the steps of:

determining an observed number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points; and

determining an expected number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points;

wherein the determining whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure step is based on a calculation that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points and the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points.

10. The method of claim 9 wherein the determining whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure step comprises producing a chi-squared statistic based on the observed numbers and the expected numbers for each of the fuel dispensing points and comparing the chi-squared statistic to a critical value.

11. The method of claim 7 further comprising the steps of:

determining a proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determining an overall proportion of vapor flow to dispensed fuel ratios indicating a failure; and

comparing the proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the plurality of dispensing points to the overall proportion of vapor flow to dispensed fuel ratios indicating a failure, thereby determining which of the plurality of fuel dispensing points have experienced true vapor recovery failures.

12. The method of claim 11 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure.

13. The method of claim 11 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 1% significance level.

14. The method of claim 11 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 5% significance level.

15. A method of detecting true vapor recovery failures in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the method comprising the steps of:

calculating a plurality of vapor flow to dispensed fuel ratios for each of a plurality of fuel dispensing points;

determining a proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determining an overall proportion of vapor flow to dispensed fuel ratios indicating a failure; and

comparing the proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the plurality of dispensing points to the overall proportion of vapor flow to dispensed fuel ratios indicating a failure, thereby determining which of the plurality of fuel dispensing points have experienced true vapor recovery failures.

16. The method of claim 15 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure.

17. The method of claim 15 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the

overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 1% significance level.

18. The method of claim 15 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 5% significance level.

19. A system for detecting true vapor recovery failures in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the system comprising:

a plurality of fuel dispensing points coupled to a main fuel storage system by fluid carrying conduit and vapor carrying conduit;

one or more vapor flow sensors operatively connected to the vapor carrying conduit between the plurality of fuel dispensing points and the main fuel storage system;

a plurality of liquid dispensing meters each associated with one of the plurality of fuel dispensing points and operatively connected to the fluid carrying conduit between the one of the plurality of fuel dispensing points and the main fuel storage system; and

a central electronic and diagnostic system adapted to:

communicate with the one or more vapor flow sensors and the plurality of liquid dispensing meters;

calculate a plurality of vapor flow to dispensed fuel ratios for each of the plurality of fuel dispensing points;

determine a proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determine an overall proportion of vapor flow to dispensed fuel ratios indicating a failure; and

compare the proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the plurality of dispensing points to the overall proportion of vapor flow to dispensed fuel ratios indicating a failure, thereby determining which of the plurality of fuel dispensing points have experienced true vapor recovery failures.

20. The system of claim 19 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure.

21. The system of claim 19 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 1% significance level.

22. The system of claim 19 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 5% significance level.

23. A system for detecting true vapor recovery failures in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the system comprising:

a plurality of fuel dispensing points coupled to a main fuel storage system by fluid carrying conduit and vapor carrying conduit;

one or more vapor flow sensors operatively connected to the vapor carrying conduit between the plurality of fuel dispensing points and the main fuel storage system;

a plurality of liquid dispensing meters each associated with one of the plurality of fuel dispensing points and operatively connected to the fluid carrying conduit between the one of the plurality of fuel dispensing points and the main fuel storage system; and

a central electronic and diagnostic system adapted to:

communicate with the one or more vapor flow sensors and the plurality of liquid dispensing meters;

calculate a plurality of vapor flow to dispensed fuel ratios for each of the plurality of fuel dispensing points;

determine an observed number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determine an expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points; and

determine whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on a calculation that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points.

24. The system of claim 23 wherein the central electronic and diagnostic system determines whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on producing a chi-squared statistic that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points and comparing the chi-squared statistic to a critical value.

25. The system of claim 23 wherein the central electronic and diagnostic system is further adapted to:

determine an observed number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points; and

determine an expected number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points;

wherein the central electronic and diagnostic system determines whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on a calculation that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points and the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points.

26. The system of claim 25 wherein the central electronic and diagnostic system determines whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on producing a chi-squared statistic that is a function of the

observed numbers and the expected numbers for each of the fuel dispensing points and comparing the chi-squared statistic to a critical value.

27. The system of claim 23 wherein the central electronic and diagnostic system is further adapted to:

determine a proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determine an overall proportion of vapor flow to dispensed fuel ratios indicating a failure; and

compare the proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the plurality of dispensing points to the overall proportion of vapor flow to dispensed fuel ratios indicating a failure, thereby determining which of the plurality of fuel dispensing points have experienced true vapor recovery failures.

28. The system of claim 27 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure.

29. The system of claim 27 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 1% significance level.

30. The system of claim 27 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 5% significance level.